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Note on *Asplenium Glenniei* Baker in *Synopsis Filicum*,  
2d Ed. p. 488

By C. W. HOPE

In August, 1898, I had the pleasure of making the acquaintance of Professor Underwood, while he was examining certain genera of ferns in the herbarium of the Royal Gardens at Kew, and I then drew his attention to what I considered a remarkable instance of a locally plentiful Himalayan fern being sparingly found in a few localities in Mexico and in Arizona, U. S. A., having been described from the American specimens as a new species, and I asked leave to send my views as to this fern for publication in the BULLETIN OF THE TORREY BOTANICAL CLUB.

In the first edition of the *Synopsis Filicum*, under *Asplenium fontanum* Bernh., *A. exiguum* Bedd., from the Nilgiris, is mentioned as being a less divided form, with narrow fronds and ebeneous rhachis, and the authors go on to say that a similar plant had been gathered in Mexico by Mr. Glennie. But in the second edition Mr. Baker set up a new species—" *A. Glenniei* Baker, Hab. Mexico, *Consul Glennie*, Bourgeau, 252.—Very like some of the forms of *fontanum*." When at Kew, in 1888, I pointed out to Mr. Baker and Colonel Beddome that the specimens of *A. Glenniei* in the Royal Herbarium were merely a common north-west Indian fern, which I had been calling *A. exiguum* Bedd.—Mr. Baker objected that there was a wide interval between Mexico and the western Himalaya, and Colonel Beddome remarked that neither the Himalayan nor the Mexican plant could be his because the fronds were not prolonged at the apex. Prolongation of the rhachis into a "naked tail often bearing a young plant" was a character given by Beddome in his original description of the species, in the "Ferns of S. India," published in 1873, though this entry was omitted from his Handbook of 1883, where he degraded the plant to the rank of variety. This proliferous form of the tip I found, on returning to India, to be a normal, though perhaps not an invariable character of the Himalayan plant, as it is to be also of *A. micropteron* Baker, Syn. Fil. 488,— "rhachis much

produced beyond lamina, rooting at the tip, Hab. San Luis, 7000, Pearce." But *A. micropteron* differs materially in having a flattened and broadly and interruptedly winged rhachis, and also in the cutting of the pinnae, and must be considered quite distinct. Mr. Baker's type specimen of *A. Glenniei* (*vide* Ic. Fil. *pl.* 1648) has not a prolonged and proliferous rachis; but in the British Museum there is one plant among *A. fontanum*, ticketed—"U. S. Pacific Coast Flora (new to U. S.) var.—'Conservatory,' Huachuca Mts., Arizona, August 8, 1882, Lemmon Herbarium, Oakland, California," which is exactly the northwest Himalayan fern, and it is proliferous on the pinnae throughout, and also at the apex of the frond. And there are in the same herbarium two specimens from America, named *A. Glenniei* Baker, which are exactly the Himalayan plant. Also, there are in the Calcutta Herbarium three specimens named *A. Glenniei*, from America, one or two of which is the Himalayan fern, the third is not.

The Mexican plant had been named *Athyrium gracile* by Fournier, in his Fil. Mex. 102, published in 1872, and Mr. Baker gave this as a synonym of his *Asplenium Glenniei*, being obliged to reject *gracile* as the specific name because there was already *Asplenium gracile* Fée, and also another plant so named by Pappé and Rawson. Fournier's plant is in the "Herbier de la Commission scientifique du Mexico, recueilli par M. Bourgeau 1865-66." Lemmon's plant, collected in Arizona, 1882, was identified by Baker as *A. Glenniei*, and was cited as *A. Glenniei* Baker, by Eaton in the BULLETIN OF THE TORREY BOTANICAL CLUB, 1883, p. 29, and some specimens collected by Pringle, and by Lloyd, in Mexico in 1886 and 1894, were also so named.

I find no difficulty in separating the Himalayan and North American plant from *A. fontanum* Bernh.; but it is not without hesitation that I came to the conclusion that it is the same as Beddome's Nilgiri plant. Beddome found his plant in only one station, and he then thought it nearly allied to *A. comptorhachis* Kze., which Baker unites with *A. lunulatum* Sw. Mr. Gamble has a dozen plants ticketed *A. exiguum*, which he got near Barliár, on the Nilgiris, 2500 ft. alt., all small and narrow, and with prolonged rhachises. I have seen no S. Indian specimen nearly so large as the Himalayan plant reaches. Of the latter-named plant I wrote the following description about eight years ago:

*Plants* isolated, or united in tufts by the matted roots; *caudex* erect, short; *stipes*  $\frac{1}{2}$ – $2\frac{1}{2}$  in. l., rarely more than  $1\frac{1}{2}$  in., densely tufted, soft, castaneous, clothed at base with linear hair-pointed dark-colored scales, more or less so clothed upwards, scales gradually changing upwards to soft hairs, *frond* linear-lanceolate, bipinnatifid, never nearly bipinnate, 2–9 in. l.,  $\frac{1}{2}$ – $1\frac{1}{4}$  in. br., *rhachis* flattened, winged, green in upper two thirds, the castaneous color of stipes extending farthest up the inferior side, and sometimes in patches; *pinnae* 20–25-jugate, oblong with an expanded base or cuneate, sometimes leafy and then obliquely triangular and less cut, subpetiolate, blunt, costae inconspicuous, undulate laterally, lower pinnae more distinct, shorter but scarcely narrower at base, sometimes trifoliate in shape; segments 3–6-jugate, having 1–6 teeth according to number of veinlets, lower margins concavely cut or scooped out, lowest anterior much cut away; color dark green; *veins* one to each segment sometimes forking near tips; *sori* costular, one at the base of each segment, two or more in lowest anterior; *frond* often very attenuate upwards and then rooting at tip; segments sometimes all truncate or marginate at apex and there proliferous."

The Himalayan habitats I have noted are: The PUNJAB: in *Kuller* 7–9000 ft. alt., one station; in the *Simla Region* 6–9000 ft., not common, but gathered by seven persons separately. In the NORTHWESTERN PROVINCES: in the *Dehra Doon Dist.*, in Iannsar 7000 ft., in the Hill Sanitarium of Mussooree 55–7000 ft., locally plentiful; in *Garhwal* 6–7000 ft., not often seen; in the *Kumaun Dist.* 5–10000 ft., in various places.

As to distribution—besides the Mexican and U. S. A. habitats already mentioned—I have noted Waughtu in the Sikkim Himalaya, *Hook. fil. & Thoms.* 1847; the S. Indian stations for Beddome's plant already mentioned: China—Monpine, *David*, 1889; Mengtez; Yunnan, *W. Hancock*, 1893; "shady rocks, very local."

If the Nilgiri (S. India) plant (Bedd. F. S. 1, *t.* 146) be admitted to be the same as the American and Himalayan plants (Beddome added "Himalayas" as a habitat in his Handbook), then Beddome's name *A. exiguum*, being the older, must have priority over Baker's name, *A. Glenniei*. *A. Zunnanense* Franchet in Bull. Bot. Soc. France, 1885, p. 28, which Mr. Baker, in Ann. Bot., 1892, placed as a variety of *A. fontanum* Bernh., near var. *exiguum*, and of which Beddome in his Suppt. of 1892, after describing it, says: "Seems hardly to differ from typical *fontanum*," must, I think, also come under *A. exiguum*.

I have not gathered *A. fontanum* Bernh., but I possess numerous specimens, collected by five contributors in the northwestern Himalaya, from Hazára eastward to Kumaun, and have seen many more collected by them and many others from Afghanistan to west Nepal, and, except as to size, I can say that the specimens are very uniform. Mature plants vary from  $2\frac{1}{2}$  to 12 inches in height (including rootstock) according to attitude and exposure. The largest I have seen were from Kashmire at an altitude of 4500 ft.; one I have is 12 inches high; and I have a note of another plant which had 16 fresh fronds covering, as dried, an area of  $15 \times 10$  inches. There is never any resemblance to, or passage into *A. exiguum* Bedd. The Indian specimens agree with the description of *A. fontanum* in that they are all distinctly *bipinnate*; *A. exiguum* (or *Glenniei*) is never more than *bipinnatifid*. *A. fontanum* is always of a pale grass-green color—almost yellowish sometimes: *A. exiguum* is always dark green. And, corresponding to the cutting and venation, the position of the sori in the two plants is quite different. In *A. fontanum* the sori are all placed in the pinnules and segments, on the veinlets, without any relation to the costa of the pinna: in *A. exiguum* they are in a row on each side of and close to the costa, curving outwards with the veins towards the segments. *A. fontanum*, so far as I know, never has fronds with the rhachis prolonged and rooting at the point; nor have I seen it proliferous at the pinnae. Both these features are characteristic of *A. exiguum*.

A great deal of the European material called *A. Halleri* Willd. (under *Aspidium*), which by some botanists is reduced to *A. fontanum*, is more like *A. exiguum* than like *A. fontanum*, but the fronds of *A. Halleri* are broader for their length, and the sori do not lie along the costa or secondary rhachis. Willdenow said of *A. Halleri*: “Ab *A. fontano* ab unde distincta species.” *A. exiguum* varies considerably in width of frond and pinnae and in cutting, but the variations are all away from the direction of *A. fontanum*. Indeed I should find it difficult to point out identical characters, or even resemblances, between the two plants.

*A. exiguum* is abundant in many places within the municipal limits of Mussooree, the Hill Sanitarium in the District of Dehra Doon, Northwest Provinces, India—where I have chiefly observed

it—at altitudes of about 5500 to almost 7000 feet, on (usually) limestone, moss-covered rocks in the forest, generally with a northern aspect. It spreads itself out like aster, the prolonged fronds bending backward until they hang their tips in the moss, seeking for cracks or crevices, or earth, in which to root. The fronds last for two years at least, living through the winter in frost and snow, and through the succeeding dry, hot season, in a shriveled and apparently dead state until the rainy season comes in June or July, when they uncurl, and then frequently, if they have not already done so, produce young plants on their tips, or on their pinnae. This is followed by the springing up of fresh fronds from the same roots, which are not generally proliferous in that season, so far as I have seen. Judging from the numerous herbarium specimens I have seen *A. fontanum* of the Himalaya has a more erect habit than *A. exiguum*, and is never proliferous.

The late Mr. H. F. Blanford, F.R.S. (*vide* his “List of the Ferns of Simla, in the N. W. Himalaya between Levels of 4500 and 10,000 feet,” Jour. Asiat. Soc. Bengal, **57**: 294–315. 1888), said that *A. exiguum* was rare in the neighborhood of Simla. In Mr. J. S. Gamble’s collection I have found three sheets—with eleven specimens—from Simla. On the five days’ march from Simla to Bági, eastward on the Great Thibet road in 1886, I saw only two or three specimens at about 8000 feet altitude, but the fern may be more abundant off the road at lower levels. In 1861 I saw one plant of *A. exiguum* at Naini Tál, in Kumaun, N. W. Himalayas, by the side of the lake, but none anywhere else or on the way to Almora, thirty miles northward; and there is not much record of it from the eastward of Mussooree. There is no passage from *A. exiguum* to the next species, *A. varians* Hk. and Gr.